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Review

Assessment and treatment of compulsive sexual behavior disorder: a sexual medicine perspective

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Abstract

Introduction: The addition of compulsive sexual behavior disorder (CSBD) into the *ICD-11* chapter on mental, behavioral, or neurodevelopmental disorders has greatly stimulated research and controversy around compulsive sexual behavior, or what has been termed "hypersexual disorder," "sexual addiction," "porn addiction," "sexual compulsivity," and "out-of-control sexual behavior."
Objectives: To identify where concerns exist from the perspective of sexual medicine and what can be done to resolve them.
Methods: A scientific review committee convened by the International Society for Sexual Medicine reviewed pertinent literature and discussed clinical research and experience related to CSBD diagnoses and misdiagnoses, pathologizing nonheteronormative sexual behavior, basic research on potential underlying causes of CSBD, its relationship to paraphilic disorder, and its potential sexual health consequences. The panel used a modified Delphi method to reach consensus on these issues.
Results: CSBD was differentiated from other sexual activity on the basis of the *ICD-11* diagnostic criteria, and issues regarding sexual medicine and sexual health were identified. Concerns were raised about self-labeling processes, attitudes hostile to sexual pleasure, pathologizing of nonheteronormative sexual behavior and high sexual desire, mixing of normative attitudes with clinical distress, and the belief that masturbation and pornography use represent "unhealthy" sexual behavior. A guide to CSBD case formulation and care/treatment recommendations was proposed.
Conclusions: Clinical sexologic and sexual medicine expertise for the diagnosis and treatment of CSBD in the psychiatric-psychotherapeutic context is imperative to differentiate and understand the determinants and impact of CSBD and related "out-of-control sexual behaviors" on mental and sexual well-being, to detect forensically relevant and nonrelevant forms, and to refine best practices in care and treatment. Evidence-based, sexual medicine–informed therapies should be offered to achieve a positive and respectful approach to sexuality and the possibility of having pleasurable and safe sexual experiences.

Keywords: compulsive sexual behavior; hypersexuality; impulse control disorder; ICD-11; sex/porn "addiction"; comorbidity; paraphilias; assessment; diagnosis; treatment.

Introduction

The notion that "out of control," driven sexual behavior associated with distress and negative consequences is considered a mental disorder is still quite controversial.[1] On one hand, compulsive sexual behavior (CSB) has a diagnostic formulation as a CSB disorder (CSBD) that was included as an impulse control disorder in the *International Classification of Diseases, Eleventh Revision* (*ICD-11*).[2] On the other, it was not included as "hypersexual disorder" in the fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (*DSM-5*).[3] Moreover, treatment centers have profited from it being labeled an "addiction," and current social media, periodicals, and online self-help forums have provided a venue for an enormous spread of misinformation regarding its potential causes, severity, and base rates among different populations, especially in North America. This controversy illustrates the lack of consensus regarding the definition and diagnosis and is one in which sexual medicine has a unique perspective and responsibility to address. Therefore, the International Society for Sexual Medicine convened an expert scientific panel to provide a comprehensive review of the current understanding of CSBD as a clinical entity and to what extent empirical data

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support its potential causes, levels of severity, expression in the population, and comorbidity with other disorders. We then consider what might be best practices in potential care and treatment.

The history of clinical sexology includes attempts to classify "addiction-like" or compulsive forms of sexual behavior. This starts in the clinical literature with von Krafft-Ebing's description of *hyperaesthesia sexualis*.[4] Since then, various discourses have ensued to describe this clinical phenomenon, and these have been influenced by changing sociopolitical-cultural climates. One of the important discourses has been centered on the boundary between nonnormative sexual behavior (eg, higher sex drive) and a clinical diagnosis of hypersexual disorder or CSB. There is a serious risk of pathologizing sexual behavior that is outside the norm or subject to moral or cultural disapproval. Another discourse has dealt with the etiologic or classification question: Is the phenomenon a sexual disorder, an "addiction," an "impulse control disorder," or an "obsessive-compulsive disorder"? Does the phenomenon have paraphilic and nonparaphilic modes of expression? How can it be assessed, the differences distinguished, and what are the underlying mechanisms or correlates?

There is not enough space here to go into detail about the different disputes that marked the consideration of this phenomenon for inclusion in the *DSM* and *ICD* historically. Nevertheless, regarding the *DSM-5*, there was a proposal for the conception and criteria of a diagnosis of hypersexual disorder for inclusion, as well as careful literature reviews from the working group,[5] available measurement instruments, and a completed field trial.[6] However, the Board of Trustees of the American Psychiatric Association decided in the end not to include the diagnostic category in the *DSM-5* or its 2022 text revision. The 2 overarching reasons involved insufficient scientific evidence that the proposed criteria represented a distinct clinical syndrome and concerns about potential misuse of the hypersexual disorder diagnosis in forensic settings.[7-9]

The initial situation for the *ICD-11* was considerably different. Although the diagnosis of "excessive sexual drive" had a shadowy existence without empirical research support, it had existed in the form of "satyriasis" and "nymphomania" in early versions of the *ICD* and as part of the chapter on sexual dysfunctions within the *ICD-10*. However, a more precise description of the diagnostic prerequisites and detailed research criteria were absent. The diagnosis was hardly used according to our clinical impression but also according to data from published research (eg, no hits if one enters the terms "excessive sexual drive" and "*ICD-10*" in MEDLINE). This raised the question of whether a new diagnostic category of the phenomenon should exist and to which chapter it should be assigned.

Aspects associated with the clinical syndrome might affect various aspects of sexual health and well-being at the individual and cultural levels.[10-13] CSBD is often associated with negative attitudes about sexuality and excessive guilt about one's sexual behavior that can interfere with feelings of pleasure and satisfaction and create distress. That guilt may be due to religious or cultural values, which might stigmatize certain sexual behaviors (eg, masturbation, use of erotica, same-sex relationships).[14] CSBD can also be associated with coercive sexual behavior involving experiences of being a victim of sexual violence.[12] There can be an increased risk of sexually transmitted infections or other health problems.[15,16] In addition, CSBD can be associated with difficulty developing or sustaining intimate relationships, as well as communication and relationship problems.[17] Thus, sexual health and well-being are hindered among people with CSBD, and given the currently known prevalence, this is a serious public health problem for societies.[11,17-19]

Thus, since there is public health relevance for CSBD, the elimination of this category was less in question than a revision of the terminology and its placement as a diagnostic category. There was quite a debate of whether to place this syndrome in disorders due to addictive behavior, along with gambling or gaming disorder, or to place it as a type of impulse control disorder. Other considerations were to place it within obsessive-compulsive disorders (OCDs) or with sexual dysfunctions, which were moved out of the chapter on mental and behavioral disorders and into a new chapter of "conditions related to sexual health." The final decision was to place this in the subchapter of impulse control disorders and to name it CSBD. Central to the diagnostic criteria were difficulties with sexual self-control over a prolonged time that are associated with distress. In the *ICD-11* guidelines,[2,20] however, a deliberate attempt was made to prevent the risk of overpathologizing. Distress caused by overpathologizing nonnormative sexual behavior, especially by moral judgments and disapproval, does not qualify for the diagnosis. The description of CSBD says that it is "characterized by a persistent pattern of failure to control intense, repetitive sexual impulses or urges resulting in repetitive sexual behavior. Symptoms may include repetitive sexual activities becoming a central focus of the person's life to the point of neglecting health and personal care or other interests, activities, and responsibilities; numerous unsuccessful efforts to significantly reduce repetitive sexual behavior; and continued repetitive sexual behavior despite adverse consequences or deriving little or no satisfaction from it. The pattern of failure to control intense sexual impulses or urges and resulting repetitive sexual behavior is manifested over an extended period of time (eg, six months or more), and causes marked distress or significant impairment in personal, family, social, educational, occupational, or other important areas of functioning. Distress that is entirely related to moral judgments and disapproval about sexual impulses, urges, or behaviors is not sufficient to meet this requirement."[2]

CSBD may be expressed in a variety of behaviors, such as sexual behavior with others, masturbation, use of pornography, or cybersex (internet sex). Although precise diagnostic requirements for CSBD are an important step, the potential for overpathologizing still exists on the basis of moral judgments or societal disapproval, indeed even in misguided self-diagnosis. CSBD must be carefully differentiated from other mental or sexual disorders, such as paraphilic disorder; it must be determined whether it stems from moral guilt; and it must be distanced from the kind of unscientific information and misguided beliefs that proliferate on social media, such as the notion that plasma androgens are lost during sexual activity[21] or that watching pornography results in "pornography-induced erectile dysfunction."[22-24]

What CSBD is and what it is not

Despite the proliferation of CSB-related studies in the past 2 decades and the inclusion of an official diagnosis for CSBD in the *ICD-11*,[2,25,26] one of the most fundamental questions regarding CSBD still pertains to the accurate identification of those experiencing CSBD. This is critical to avoid

pathologizing normal sexual behaviors or misdiagnosing individuals and to provide adequate care for everyone seeking treatment for one's sexual behaviors.[27-29] Persons with CSBD present themselves clinically and socially with a perception of out-of-control sexual behavior, extreme guilt over sexual gratification, and distress related to the adverse consequences of repetitive sexual behavior and/or the lack of satisfaction from it. This might include guilt and shame over masturbation, online pornography use, intrusive sexual thoughts, and sexual activity with others outside a relationship or established social boundaries. This has been popularized in the media as a "sex addiction" or "porn addiction" and therefore as a disorder, but it is also portrayed in some scientific publications as being "reminiscent" of addiction and attributed to the kind of sensitized brain dopamine function observed in drug addiction.[30] Sex or pornography addiction, in turn, has been used in the media as a catch-all physiologic process underlying the perceived behavior that leads to guilt, shame, or feelings of distress or to perceived conditions in which sexual responses are blunted (eg, in pornography-induced erectile dysfunction), in which people who view pornography and presumably masturbate compulsively become unable to gain or sustain erections to their partners or indeed to previously utilized pornography vignettes. Instead, they seek out new pornography vignettes or partners that they find exciting enough to induce erection and allow masturbation or sexual activity. An industry based on the principles of Alcoholics Anonymous has grown around the treatment of "sex addiction" and "porn addiction" since the 1980s.[31,32] This industry is directly related to the increased concept of addiction to describe any excessive, out-of-control behavior and to the proliferation of self-help groups, which are modeled after 12-step groups and treatment programs that have been helpful for people with substance use disorders.

From a diagnostic perspective, CSBD should be recognized as a distinct and clearly defined clinical disorder[2] that is differentiated from other disorders (eg, paraphilias, persistent genital arousal disorder[33]). In addition, it must be acknowledged that feeling a loss of control and the perceived consequences of uncontrolled sexual behavior represent subjective experiences largely influenced by individual values, beliefs, cultural norms, environmental expectations, and personality characteristics.[34] To avoid overpathologizing individually unacceptable, socially unacceptable, or high-frequency sexual behavior, a restriction was added to the diagnostic requirements that one's distress should not be exclusively related to moral judgment or social disapproval.[2,26] However, some clinicians have argued that feelings of moral incongruence toward pornography viewing, masturbation, extramarital sex, or other sexual behaviors should not arbitrarily disqualify one from receiving a diagnosis of CSBD, and its role in the etiology and definition of CSBD warrants additional understanding and further study.[28,29]

Another challenge of the initial clinical assessment is to rule out "false CSBD presentations," as a CSBD mental disorder diagnosis may be used by a patient or partner as a convenient excuse for sexual misconduct (eg, when a sexual affair is discovered by a partner). Therefore, assessing one's motivation to seek treatment is an important part of the evaluation.[35]

Clinicians may be misled by the fact that emotional dysregulation was not included in the *ICD-11* diagnostic guidelines of CSBD. However, it is recognized as an "additional clinical feature" in which "individuals with CSBD often engage in sexual behavior in response to feelings of depression, anxiety, boredom, loneliness, or other negative affective states,"[2] and the relationship between emotional regulation and sexual behavior was described as an important aspect of treatment planning.[2,36,37]

Several important limitations of CSBD research are pertinent. First, CSBD research has been conducted mainly in Western countries[18] and largely on cisgender heterosexual males. Less is known about the specific needs for CSBD assessment of males in non-Western cultures or in the context of women and sexually diverse people.[38] Clinical presentations of CSBD and therapeutic needs in those populations may differ. For example, women more commonly report engaging in sexual fantasies and/or seductive behaviors that lead to multiple affairs, participating in sadomasochistic behavior or sex work, and describing themselves as "love addicted." Relative to men, women also exhibit higher sexual anxiety and depression, external sexual control, and fear of sexual relationships.[39-43] More research is needed to improve clarity and instrumentation adapted to clinical assessments of these understudied groups and cultures, especially since the etiology and expression of CSBD may vary as a function of culture.

How much is too much?

Two of the important aspects of the CSBD diagnostic criteria are impulse control problems and moral disapproval. First, we review the scientific evidence on whether the quantity of engagement in sexual behaviors might be considered an objective, reliable indicator of control problems in CSBD. Then we discuss the role of moral disapproval in self-labeling one's sexual behavior as out of control, compulsive, or addictive-like and thus in need of therapy. To explore these issues, we examine the literature on problematic pornography, as >80% of those seeking treatment for CSBD report problematic pornography use (PPU),[7,44] which is the most commonly studied CSB in scientific reports.[25]

The frequency or amount of a given behavior or activity is a potential objective indicator of control problems (eg, frequency of alcohol consumption[45-47]). However, when we examine behaviors that derive from natural appetitive drives, such as sexual behavior, it is more challenging to draw the line between "normal" and "dysregulated" behavior, as people's sexual desires and experiences may vary substantially. This variability, even extreme forms, is normal if the behavior does not cause distress, impairment, or other functional problems.[5,48] For example, findings from a recent meta-analysis of 61 studies suggest that the quantity of pornography use has a positive moderate association with PPU,[49] indicating that a higher quantity of pornography use is associated with more severe PPU. Yet, the association was only moderate, and the frequency of pornography use was identified as the most peripheral symptom of PPU in particular and CSBD in general in network analytical studies of general and treatment-seeking populations.[50,51] Thus, the frequency or quantity of pornography use alone might not accurately differentiate those with and without control problems.

This notion was supported by large-scale studies in general and treatment-seeking populations.[52-54] In addition to the groups that rarely used pornography and did not experience control problems (ie, nonproblematic users, 68%-76% of users) and those that used pornography frequently and

identified as PPUs (ie, problematic users, 3%-12%),[52,54] 2 other groups emerged that might be important for differential diagnosis. Some used pornography as frequently as problematic users but did not report control problems.[53-55] Still others used pornography rarely but experienced self-perceived PPU. In one study, the high-frequency nonproblematic group comprised 19% to 29% of the users[52] and may represent those with high sexual desire whose sexual behaviors align with their needs and do not cause adverse consequences in their lives.[56,57] Indeed, the number of people with nonproblematic high-frequency use was 3 to 6 times higher than that with problematic high-frequency use, suggesting that frequent pornography use, per se, is not necessarily problematic.

The fourth group of pornography users were those who watched pornography rarely yet were highly distressed about it (approximately 12% of users[54]). This occurred presumably due to moral disapproval of pornography use and perhaps masturbation.[58] According to the early propositions of the moral incongruence model of pornography use,[59,60] PPU may appear due to not only control problems or dysregulation but also high levels of religiosity and/or moral incongruence toward pornography use, making the associations between self-perceived PPU and religiosity, moral disapproval, and incongruence complex. Based on findings of nationally representative and large-scale cross-sectional and longitudinal studies, moral incongruence may be best conceptualized as a moderator of the association between pornography use frequency and moral disapproval of pornography use ("ie, feeling as if one's behaviors and one's values about those behaviors are misaligned"[60]). The associations between pornography use frequency and self-perceived PPU can be stronger among those with higher levels of moral disapproval, resulting in feelings of PPU despite the relatively low frequency of pornography use.[61] Similarly, according to a recent systematic review,[62] although small to moderate direct positive associations can be seen between religiosity and PPU, the interaction between religiosity and pornography use frequency may be a more accurate predictor of self-perceived PPU. Studies including adults and adolescents also reported that pornography use frequency was more strongly related to self-perceived PPU at higher levels of religiosity.[63,64] Thus, religiosity and moral disapproval of pornography use may play crucial roles in self-perceived PPU, as evidenced by findings suggesting that 1 in 4 treatment-seeking men may not have objectively dysregulated or high-frequency pornography use but still seek help due to moral incongruence.[53,65]

In sum, the frequency and amount of pornography use is not, in itself, a reliable indicator of control problems in PPU or CSBD. Using it as an exclusive measure of PPU or CSBD could easily result in overestimation of people with PPU and associated pathologizing of high sexual desire or passion,[56,57,66–68] in addition to the erroneous loss of cases with self-perceived PPU who may not use pornography frequently.[29,53,54] Therefore, a precise assessment (eg, with well-validated scales[69-71] and/or clinical interviews adapted culturally for diverse populations) and differential diagnosis are needed to determine whether PPU stems from sexual self-control problems, moral disapproval of pornography use, or both, as all may trigger treatment seeking but not all be diagnosed as CSBD. Self-identifying as having PPU purely due to the distress driven by moral disapproval of pornography use is not and should never be sufficient to diagnose PPU.[28] Similarly, high-frequency pornography use without impaired control and related adverse consequences should not be diagnosed as PPU.[52] We note that much of the data so far on PPU have come from the United States, Poland, and China, and it is possible that other cultures exist where pornography use is not considered a problem.

Neurochemical and neuroanatomic mechanisms

To understand the potential neural bases of CSBD and especially how moral incongruence could lead to more sexual arousal associated with the prospect of engaging in sexual activity, it is necessary to understand how sexual behavior is organized in the nervous system. Different aspects of sexual behavior are controlled by excitatory and inhibitory neurochemical mechanisms in the brain and the spinal cord[72] (Figure 1). These form the biological basis of the dual control model first proposed by Bancroft and Janssen[73] and later augmented by Perelman,[74] who added the idea of a labile tipping point between the two. These systems place the behavior into a flow from appetitive to consummatory to satiety, which overlaps with the 4-stage models proposed by Moll[75] and Masters and Johnson,[76] as refined by Kaplan[68] and Georgiadis et al.[77] Excitatory systems such as mesolimbic dopamine and hypothalamic melanocortin activate sexual desire and attention toward external sexual cues, while hypothalamic dopamine, noradrenaline, and oxytocin help to switch on the parasympathetic control of genital blood flow that creates and augments genital arousal.[72] As sympathetic tone ramps up during sexual interaction, a spinal switch releases it to create sexual climax, which is registered in the brain as orgasm. The ecstatic pleasure of orgasm is likely mediated by endogenous opioid release (eg, β-endorphin), whereas the longer-lasting state of satiety and relaxation is likely mediated by serotonin.[72] The inhibition induced by satiety is consonant with sexual refractoriness.

Mesolimbic dopamine activation is a common neurochemical mediator of motivation, desire, and wanting/craving for all motivational systems.[78,79] It does not mediate sexual reward per se; rather, it underlies the process of sustained attention to and movement toward cues that predict sexual reward, especially those related to pleasure and orgasm.[80] Mesolimbic dopamine release can be phasic or tonic in response to cues, and these release patterns correspond in sexual behavior to appetitive and consummatory processes, respectively.[81] Thus, in this conceptualization, seeking out stimuli associated with a goal would be an appetitive response, whereas acting on the goal once it is obtained would be a consummatory response. Some cues are prepotent, produce arousal, and are innately preferred (eg, visual sexual cues depicting primary and secondary sex characteristics, beautiful faces/bodies, stimulating or comforting auditory cues, music that gives one "chills," certain food- or fluid-related cues, preferred pet animals, smells). Preference for other cues is learned through their pairing with and thus prediction of arousal and pleasurable gratification. In all cases, mesolimbic dopamine is a mediator of cue strength, and its transmission in regions of the brain, such as the amygdala and ventral striatum or nucleus accumbens, will be augmented in response to cues that predict

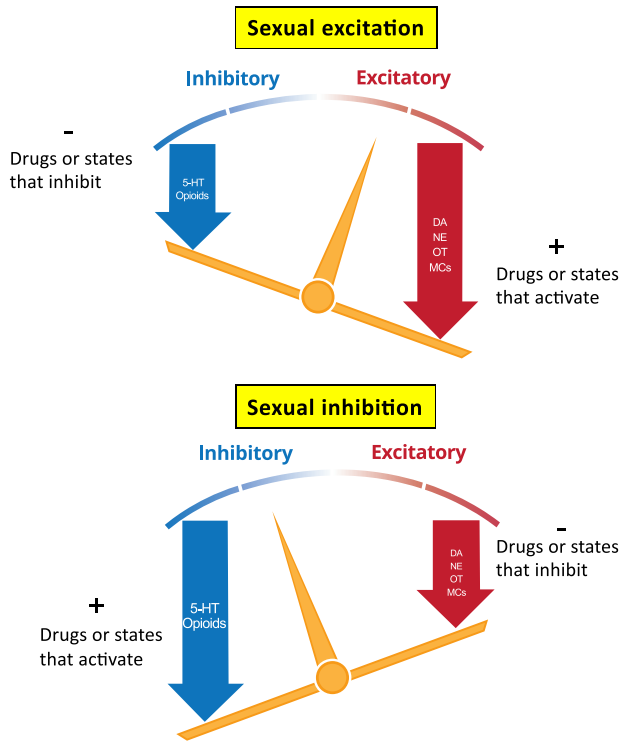

Figure 1. Dual control model shows the neurochemical mechanisms of excitation and inhibition derived from Bancroft and Janssen[73] and Perelman[74] and detailed by Pfaus.[72] Drugs or psychological states that activate those mechanisms can shift an individual into general sexual excitation or inhibition. In cases of compulsive sexual behavior disorder, individuals are in states of excitation and/or disinhibition.

reward (Figure 2). This has been observed in brain imaging and functional magnetic resonance imaging studies of self-identified problematic pornography users or "sex addicts" relative to controls.[82,83]

In addition to prepotent cues, a potent driver of mesolimbic dopamine transmission is "reward prediction error,"[84] in which the real reward intensity or occurrence does not conform to the prediction based on past experience. When this happens, dopamine transmission is augmented, resulting in a focus of attention on other details or responses that might explain the discrepancy and bring the predicted reward back. With respect to CSBD, guilt and forced abstinence are hypothesized to create a reward prediction error (ie, individuals want something that they "should not have" and try to avoid). The augmented dopamine response to cues that predict reward under such circumstances (eg, fantasy, pornographic imagery) contributes to intrusive thoughts and arousal,[85,86] and sexual rewards experienced on high arousal can become highly preferred and garner preferential attention.[35,87,88] This can feed back to strengthen the feeling of guilt as a preparatory state that predicts highly arousing rewards. Thus, although guilt, as a form of frontal lobe–mediated inhibition that is part of "executive function," can lead to short-term decreases in unwanted behaviors, such decreases might create a schedule of intermittent reinforcement in the long term that strengthens the arousal-reward connection.[89]

As mentioned earlier, what prevents sexual behavior and pornography use from being an "addiction" are the natural inhibitory states activated with orgasm and climax that give rise to refractoriness.[72*,77] At the level of the spinal cord, these involve the activation of sympathetic outflow in spinal circuits that generate climax and open blood vessels so that blood can move from the periphery back to the core, thus preventing erection for a time. In the brain, orgasms activate opioid and serotonin transmission. Both inhibit dopamine release and cell body activation in the short term, but opioids in particular sensitize dopamine release in the long term to unconditioned and conditioned cues that predict reward.[72] Refractoriness and satiety occur after natural rewards, but they do not occur—or they occur differently—from drug reward or electrical brain stimulation reward. Thus, there is no withdrawal state after sex. The inability to experience genital arousal in self-perceived pornography-induced erectile dysfunction, for example, would be predicted to reverse itself if the individual allows the refractory state to wear off. This will strengthen the dopamine response to erotic cues as one will no longer be in a state of chronic refractoriness from compulsive masturbation. Instead, one will seek out more stimulating erotic material on the internet or elsewhere, which can then activate excitatory neural systems under residual refractoriness. This is often interpreted as evidence of "tolerance" in behavioral addiction models.[30,31,90] Figure 3 shows psychological and neurobiological processes that conspire to excite and disinhibit sexual responses in CSBD.

As with autonomic function, arousal states can habituate if the appetitive behaviors become routine, leading to less potent gratification and a dampening of mesolimbic dopamine response over time. This also leads to the perception that "normal" sexual stimuli no longer arouse the person *because* the individual is "addicted" to abnormally high arousal states to function sexually. An analogy here would be to those who are risk takers vs those who are risk averse.[84,91,92] Dishabituation can occur in response to different erotic stimuli that are perceived to be of higher arousing potential. If people spend inordinate amounts of time seeking out stimuli of ever-higher arousing potential, to the exclusion of other need states or rewards, such behavior can resemble an OCD or an "addiction." All of this is driven in large part by the focused attention and appetitive responses mediated by mesolimbic dopamine in states of high transmission due to reward prediction error (Figures 2 and 3). In this case, reward prediction error can be produced by guilt, intermittent reinforcement, and seeking more and more arousing stimuli to overcome the effects of habituation or chronic refractoriness.

In contrast, in drug addiction, withdrawal typically results in a hyperaccentuation of physiologic processes that the drug suppresses. For example, opiates induce a state of analgesia. Withdrawal from opiates results in hyperalgesia where simple touch can be experienced as painful.[93] Thus, instead of pornography-induced erectile dysfunction, the experience of withdrawal from a chronic inhibitory state induced by masturbation should be hyperexcitation that would mitigate against the apparent need for more and more arousing imagery or actions. Indeed, withdrawal (abstinence) from pornography use by persons who self-identify as PPUs or are diagnosed with CSBD induces frequent intrusive sexual thoughts, higher sexual arousal, and increased out-of-control sexual desire as compared with nonabstinent periods.[86]

Although there are no a priori data predicting who will and will not display CSBD, some neuroanatomic correlates have emerged in brain studies of CSBD cases relative to non-CSBD cases. This goes back to the original findings of hypersexuality in individuals with frontal lobe damage or Kluver-Bucy

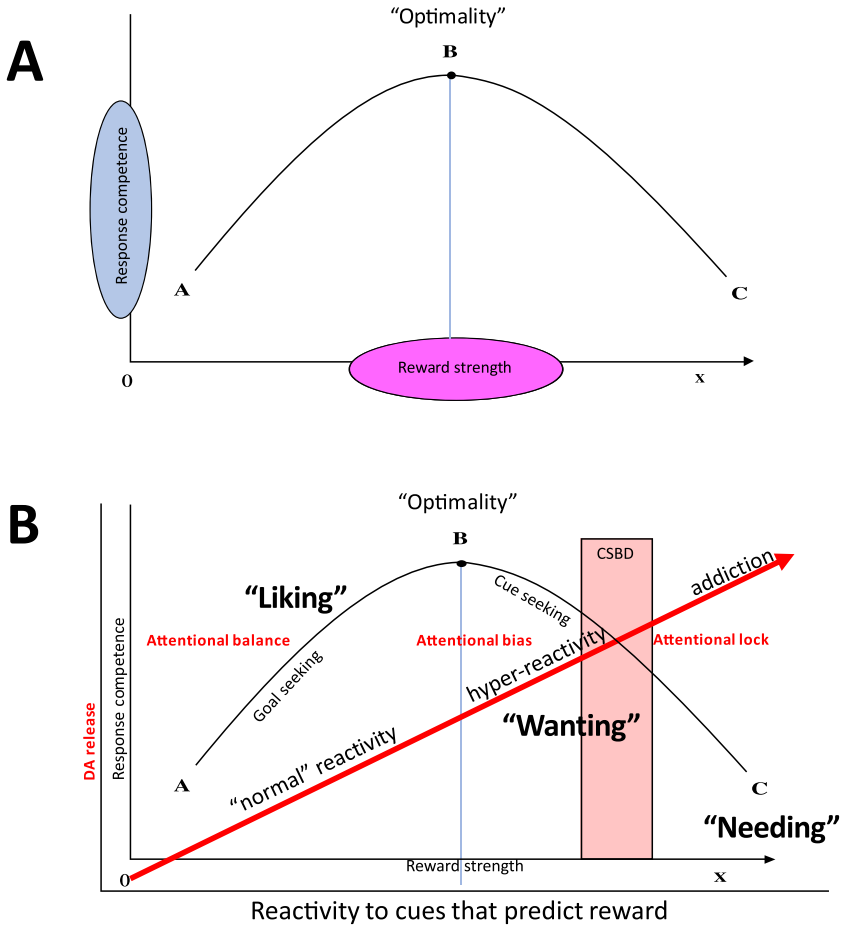

Figure 2. Modified inverted optimality curve. (A) Response competence as a function of reward strength. (B) Mesolimbic/mesocortical dopamine transmission intensity (straight line and arrow) overlaid on panel A. Dopamine release mediates goal and cue seeking, with the conscious interpretation of "wanting," "liking," and "needing," depending on the intensity of the dopamine response.[78,79] Thus, dopamine mediates normal reactivity and hyperreactivity to cues that generate sexual arousal and anticipate sexual reward. But as this moves from attentional balance to attentional bias and lock, the dopamine response mediates the compulsivity observed in compulsive sexual behavior disorder, leading ultimately to the kind of attentional lock reminiscent of drug addiction. The shaded area is where the dopamine response mediates the type of hyperattention to sexual stimuli observed in compulsive sexual behavior disorder.

syndrome.[94] In addition to hyperresponsiveness of mesolimbic dopamine, there is a general finding that the regions in the left hemisphere that mediate excitation are hyperresponsive, whereas regions in the right hemisphere that mediate inhibition are hyporesponsive. This includes greater left amygdala volume in CSBDs and other OCDs[95] and greater activation in the left striatum, inferior parietal lobe, dorsal anterior cingulate gyrus, thalamus, and dorsolateral prefrontal cortex in response to visual sexual stimuli in CSBDs relative to non-CSBDs.[96] Conversely, more pornography consumption is correlated with lower right striatum volume (gray matter) and increased activation of the right striatum by visual sexual stimuli, although lower functional connectivity of the right striatum to the left dorsolateral prefrontal cortex is observed.[97] However, it is not known whether functional differences in these neuroanatomic correlates mediate CSBD or hypersexual responses or whether they are caused by the experiential mechanisms previously described. Most important, finding increased activation of these sites or mesolimbic dopamine (DA) terminal regions, such as the nucleus accumbens, in response to visual sexual stimuli or fantasies is not by itself evidence of CSBD.

Comorbidities and differential diagnoses

Another concern regarding the accurate assessment of CSBD stems from the fact that CSB can manifest secondary to other mental health or medical conditions. It is well documented that CSB commonly co-occurs with anxiety disorders (46%-96%), mood disorders (39%-81%), attention-deficit/hyperactivity disorder (18.7%), as well as substance use disorders (46%-71%).[42,98-101] Clinicians should be able to distinguish CSBD from CSB that stems from comorbid conditions, especially when the CSB does not meet the diagnostic criteria for CSBD. A differential diagnosis is important because it leads to different therapeutic approaches.[102]

Impaired control over sexual impulses, urges, or behaviors may occur in patients during manic, hypomanic, or mixed episodes,[103-105] as well as in people with neurocognitive impairment (ie, brain lesions within frontal lobes and temporolimbic areas, in some cases of Tourette's syndrome)[106-108] or personality disorders (especially borderline)[109-112] or while under the influence of alcohol, illicit drugs, or some medications.[113-118] Dysregulation of emotion has been found as a predisposing factor to CSB, where sexual arousal and its release through sexual activity may serve as a learned way of coping with negative mood states.[102] In fact, CSB

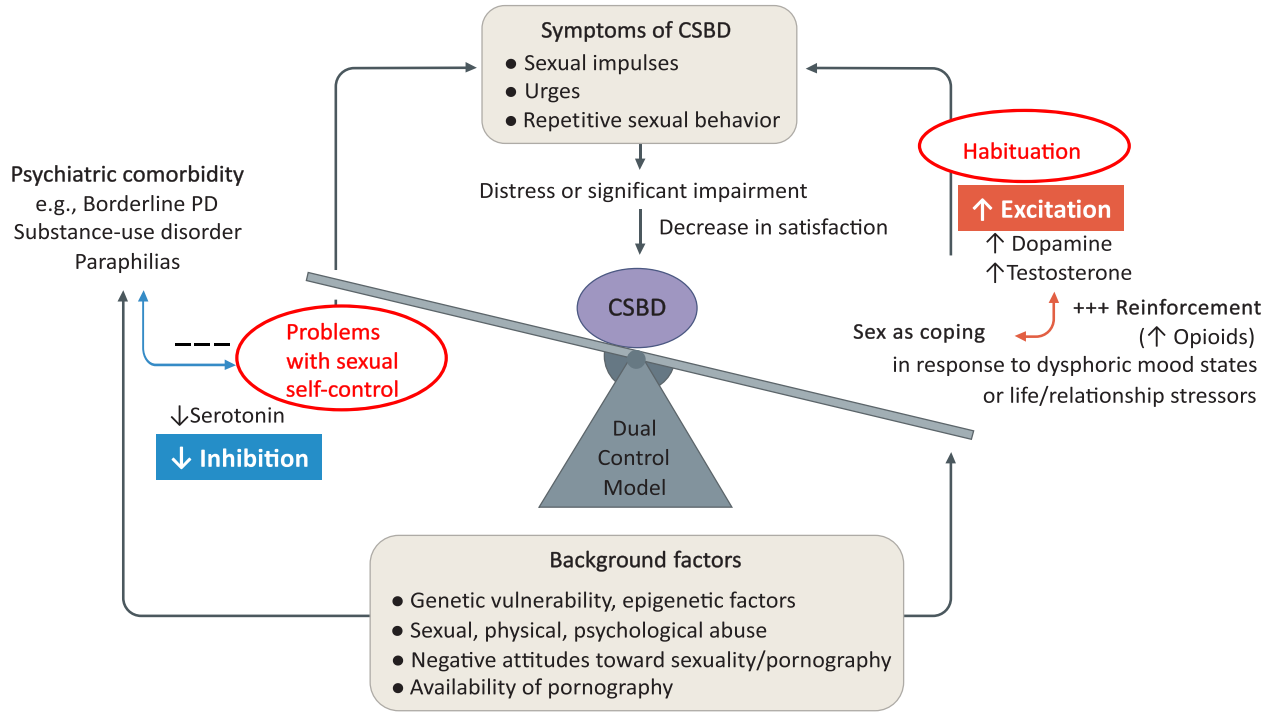

Figure 3. Psychological and neurobiological mechanisms that underlie the maintenance of excitation and disinhibition in compulsive sexual behavior disorder. After Briken.[102]

co-occurs with social anxiety and all types of mood disorders, such as major depression, bipolar disorder, and dysthymia.[99,105,119-122] These cases need additional evaluation to decide whether CSBD should be diagnosed as a separate condition or whether the pattern of behavior should be more appropriately diagnosed as a different mental health disorder or medical condition. Despite use of the term *compulsive* within the diagnostic category, CSBD is not considered a subtype of OCD. Contrary to CSBD, compulsions in OCD commonly occur in response to intrusive, unwanted, anxiety-provoking thoughts and are not considered pleasurable.[2] Nevertheless, OCD and CSBD may be diagnosed as separate comorbid conditions[123] that influence each other.

According to the *ICD-11*, CSBD diagnosis should not be assigned if (1) there is no evidence of a persistent failure to control sexual impulses, urges, or behaviors and the presence of all other diagnostic requirements outside of mood episodes; (2) sexual disinhibition due to neurocognitive disorder is attributed to primary disease; and (3) impaired control over sexual impulses, urges, or behaviors is due to the direct effect of psychoactive substances, including recreational drugs or medications, on the central nervous system, with the onset corresponding to use of the substance or medication.[2] Clinicians should be aware that the use of drugs such as methamphetamine, gamma-hydroxybutyric acid, gamma-butyrolactone, and alkyl nitrites ("poppers") to facilitate engagement in sexual activity or to enhance pleasure from it, described as "chemsex," may also lead to uncontrolled and risky sexual behavior[124] given their common disinhibitory actions on brain dopamine turnover.[125] The patterns of substance use (ie, contexts) and their relationship with sexual behavior (motivation, sequencing, impact) should be carefully investigated. As pointed out in the *ICD-11*, diagnosis of CSBD may be assigned with a disorder due to substance use if the diagnostic requirements for both disorders are met.

Paraphilic disorders represent another diagnostic entity that partially overlaps with CSBD. One diagnosis does not necessarily exclude the other, as they may be present as comorbid conditions in up to 30% of cases.[126-128] In CSBD, sexual fantasies, urges, or behaviors occur regardless of the focus of sexual arousal, while in paraphilic disorder they are related to patterns of atypical sexual arousal. According to the *ICD-11*, comorbid CSBD would not be diagnosed if an individual is able to exercise some degree of control over the behavioral expressions of the arousal pattern.[2] In those who are sexually compulsive, craving for more and more differentiated excitement may lead to searching for deviant, even preference-dystonic, paraphilia-related content and penalized behavior.[31] However, co-occurrence of paraphilias such as pedophilia, sexual sadism, or exhibitionism with CSB may pose an increased risk for sexual (re)offending.[129,130] For these cases, recognition of CSB features may become especially relevant for the development of successful treatment strategy and reoffense prevention.

CSBD and the forensic context

Evidence of the dynamic risk factors characterizing sexual offenders suggests that CSB predicts sexual offending recidivism in male criminal samples.[131-133] CSB or markers of CSB (eg, excessive pornography use) also predicted sexual violence in the context of domestic violence and intimate partner sexual aggression.[134,135] Furthermore, community women reporting sexual aggression against men revealed increased sexual compulsivity as compared with their nonaggressive female counterparts.[136] Despite the general desire to destigmatize and limit overpathologizing, the predictive role

of CSB in sexual offending gives the CSBD diagnosis potentially detrimental implications in the forensic context.[137-139] Indeed, understanding the dynamics of CSBD symptomatology is of practical interest to establish the mental state of an offender and hence to make inferences about his or her criminal responsibility.[139] Within that regard, the concept of "control" is a fundamental aspect to determine whether the offender was *mentally* capable of reasoning about and taking control over his or her actions. The legal concept of guilt or criminal responsibility involves such a capacity. However, we must stress that the legal definitions and implications associated with the concept of criminal responsibility vary substantially across countries and legal systems. Accordingly, while some legal systems consider sexual compulsivity a proxy of diminished ability to control, other systems do not.[102,139] Criminal sentences will likely differ between those systems.

Although a discussion of legal systems is beyond the scope of this article, it is worth noting that many health professionals, including professionals in the field of sexual medicine, could have a role as expert witnesses in sexual offender cases. In that regard, understanding the core presentation and dynamics of CSBD is paramount. The placement of CSBD in the impulsivity disorders section of the *ICD-11* highlights the capacity to control sexual impulses or urges as a central feature of the disorder. While the *DSM-5* task force rejected hypersexual disorder, arguing about the potential misuse of the diagnosis, especially in forensic settings,[7] the inclusion of CSBD in the *ICD-11* legitimately opens the discussion again and calls for insights on how the lack of control can be conceptualized, assessed, and intervened. Evidence of attempts to resist and reduce CSB may suggest the willingness but incapacity to control. Even when CSB is not accepted as a proxy of diminished culpability—possibly the most frequent scenario—it does have a role in the prevention of criminal recidivism. Therefore, discussion of the forensic implications of CSBD extends to the rehabilitation context of individuals who have sexually offended, including the danger risk assessment before parole or release. Despite the fact that CSBD and sexual offending behavior may co-occur, the former must not be regarded as a criminal entity or as evidence that criminal activity was involved. CSBD cases where criminal activity is suspected must be handled by clinical forensic experts, following their national legislation.

Role of the sexual medicine expert in diagnosis and treatment

Making a diagnosis of CSBD requires a careful assessment, which would include a thorough sexual history and examination of current symptomology. It would also involve taking a somatic and psychiatric history to exclude somatic causes of CSB (eg, neurologic disease or side effects of drugs or medication). In addition, the examining person must be able to perform a psychiatric assessment to make a differential psychiatric diagnosis and identify mental health comorbidities. These include mood and anxiety disorders, substance use disorders, posttraumatic stress disorder, and personality disorders. Diagnosticians should be able to select and evaluate suitable psychometric assessments of CSBD (eg, the CSBD-19, currently available in almost 30 languages[18]) and other appropriate psychometric instruments designed to help diagnose common mental health comorbidity.

With regard to etiology or predisposing factors, sexual medicine experts have the ability to ask about possible sexual or other traumatic experiences,[12] which are known to create attachment problems commonly observed in patients with CSBD[140] and other mental disorders (eg, borderline personality disorder, posttraumatic stress disorder).[15] In addition, a differential diagnosis related to comorbidity with paraphilic disorders is important. Thus, the expert must also have basic knowledge of paraphilias and in taking a sexual forensic history. This careful assessment should lead to a comprehensive diagnosis to develop an integrative biopsychosocial treatment plan (Figure 4).[15,102]

Sexual medicine experts are uniquely equipped to provide this type of comprehensive assessment and treatment planning. They are also uniquely trained to perform a detailed, thorough, nonjudgmental sexual history, unlike many other medical practitioners. Learning to separate one's values and take a nonjudgmental professional stance in evaluating a person's sexual history, current sexual behaviors, and practices is essential.[141] Attitudes toward sexuality-related behaviors, such as the use of pornography and casual sex, must be understood within the patient's sociocultural but also legal context. It is crucial to keep the social dimensions of sexuality and sexual disorders in mind. For example, there are likely to be significant transcultural differences in CSBD and clinical characteristics (eg, attitudes toward PPU).[142] In addition, sexual medicine experts have knowledge and expertise regarding a range of sexual behaviors and sexual disorders, as well as an understanding of sociocultural influences, including an appreciation of the effects of minority stress.[143] They possess the medical background to understand links to a variety of medical conditions, medications, and drugs known to affect sexual functioning and behavior. There needs to be knowledge about substances that can be used to initiate sex or that may support sexual compulsivity or about the practice of taking substances in different social contexts to enhance sex (eg, practices of chemsex).[15] Finally, there should be knowledge of, and thorough inquiries about, the potential connections between sexual dysfunctions and CSBD. Questions about partners and taking a history of the couple's sexuality should be included in the diagnostic process, as well as an offer of couples counseling if necessary.[15,102]

After diagnosing CSBD and recognizing the potential comorbid and contributing factors, the crucial step is to develop a biopsychosocial case formulation considering all the complex factors with the broadest possible understanding of the specific role that sexuality plays in contributing to or maintaining the dysfunctional behavior.[144] It is important to also explore the nonsexual reasons for the sexual behavior and why that particular sexual behavior was used for those nonsexual reasons. What is the functionality of the sexual symptom, and where does it become dysfunctional? What is repeated in a dysfunctional way, and what goal is the individual trying to achieve? What are typical triggers, emotions, and previous thoughts in connection with and after sexual behaviors? What roles do guilt and shame play, and do they prevent one from talking about sexual fantasies, thoughts, and behaviors? What role do early sexual experiences play (ie, not only of a traumatic nature)? What role do religion, spirituality, and attitudes toward sexuality play? What role do the couple or family system dynamics play in the maintenance of the symptomatology? How are the

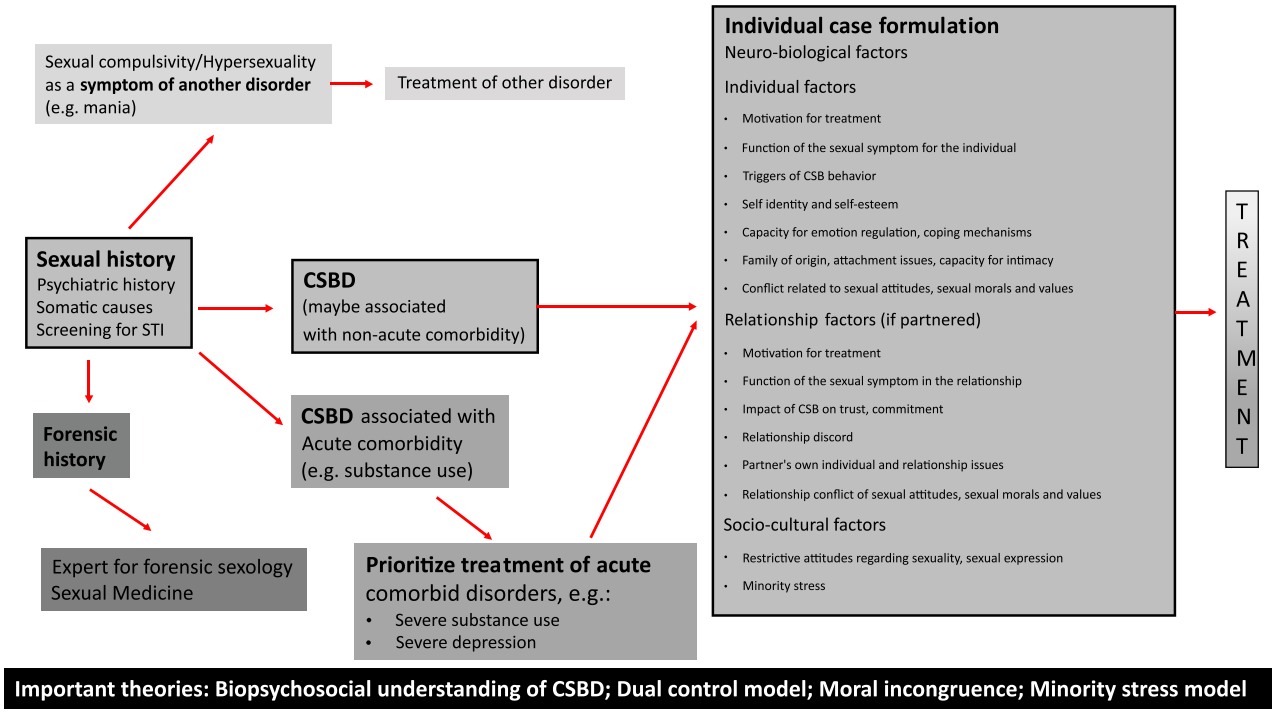

Figure 4. Considerations for diagnostic and case formulation processes.

symptoms involved in partnered or solo sexual behavior? Are there typical patterns of the dysfunctional sexual behavior here—for example, only brief sexual activity with casual partners; only routine, or "vanilla," sex in the relationship; masturbation to BDSM sex (ie, bondage, discipline [or domination], sadism, and masochism) but no integration of BDSM practices in the relationship; and sexual dysfunction in partnered sex but no sexual dysfunction with masturbation or when using pornography? Again, these are questions that can be answered only by clinicians who have the training and experience of sexual medicine experts.

With the current state of knowledge, we strongly oppose therapeutic interventions that increase the experience of discrimination, stigma, and moral incongruence. This includes approaches that pathologize sexual behavior of sexually diverse individuals, prohibit unilaterally certain sexual behaviors (eg, viewing pornography, masturbation), apply an addiction model with notions of abstinence from sexual behavior, or seek to impose the professional's moral or religious values on patients under the guise of evidence-based treatment.

Once all of this is clarified, the clinician can develop a theory-based formulation based on integrated models of CSBD treatment (Figure 4).[15,102] While there is a commonality among these integrative models, they emphasize different theoretical perspectives and models of sexual and mental health disorders. A primary perspective is a sexological/sexual medicine and sex-positive perspective. Again, to varying degrees, they recognize the influence of the dual control[73,145] and tipping point models[74,146] but incorporate other theories (eg, family systems and social learning, cognitive and behavioral, attachment and interpersonal[15,102]) and address the importance of sociocultural influences (eg, moral incongruence,[14,59,60] erotic conflicts, and minority stress[143]).

Processes of care and treatment recommendations

From what has been described so far, we have derived some basic recommendations for the treatment of people with CSBD with special reference to sexual medicine expertise (Table 1). The dual control model provides an evidence-based system that can also be easily communicated with patients. We assume that in CSBD the relationship between excitatory and inhibitory factors is imbalanced toward excitation due to sensitized neurochemical processes that strengthen excitation and produce disinhibition[15] (Figure 3). The goal of treatment is for the patient to achieve a satisfactory balance that supports the control of sexual fantasies and compulsive behaviors to reduce the risk of self-harm or harm to others and to reduce distress associated with CSBD.[15] The goal is not to renounce sexuality. However, omitting certain sexual behaviors, such as problematic use of online pornography to the exclusion of other sexual behaviors, can be an intermediate goal of treatment. Treatment for CSBD focuses on the functions (including nonsexual functions) that sexual behaviors serve in a person's life via a sex-positive approach.[147]

This approach is based on a biopsychosocial understanding of sexuality and sexual disorders, and biopsychosocial factors should be considered in the individual treatment plan. As already mentioned, knowledge about sexuality, sexual rights and norms, attitudes, behaviors, motives, and motivation is crucial for the biopsychosocial understanding of CSBD. CSBD is recognized as an impulse control disorder that manifests itself sexually. It deeply affects sexual well-being and the ability to form and maintain satisfactory emotional and sexual relationships; therefore, it should be treated with a transtheoretical and multimodal approach to provide more holistic and individualized therapeutic care.[15,102,147,148-150] This needs specific training since it is not automatically taught in

Table 1. Recommendations regarding intervention trajectories in CSBD: expert opinion.

Area to be approached	Recommendations
Assessment of comorbidities	• Assess the co-occurrence of other mental health and medical conditions, including medications and substance use (alcohol, drugs, other) • Prioritize critical conditions or symptomatology (eg, manic episodes, substance abuse)
Risk assessment	• Assess if there is a specific risk posed to partners (eg, sexually aggressive behavior, encounters with nonconsenting individuals, maltreatment) or a sexually transmitted infection risk to the patient/sexual partners, a specific risk of self-harm (eg, suicidal ideation, injuries due to intensive masturbation, or patterns associated with partnered or autoerotic behavior such as smothering)
CSBD and detected criminal sexual activity	• Assign criminal cases to experts with a background in forensic sexology (dependent on countries' legislation)
CSBD case formulation [a]	• Consider the function of the sexual symptom (eg, does it play a role in individual or couple homeostasis?). Special attention to emotional regulation difficulties and relationship dynamics is needed • Consider the context where the symptoms become dysfunctional and what are the consequences of sexually compulsive behavior • Identify the symptom's triggers (emotional, cognitive, or behavioral triggers) • Identify maintenance factors (eg, lifestyle and routines, rewarding contexts, relationship context) • Consider how the symptoms evolve in solo and/or partner sex or extramarital sex • Consider the role of cultural specificities, religion or spirituality, and sexual attitudes
Impact of the intervention	• Identify personal and social barriers to improvement or treatment adherence (eg, guilt, shame, social stigma, partner's pressure, lack of motivation) • Identify and incorporate treatment opportunities (eg, social support, partner's awareness) • Identify the need for medication
Need of referrals	• In the context of critical pathology/psychopathology, a history of sexual abuse (child or otherwise), or aversive relationship dynamics, consider the referral to other specialties (eg, trauma intervention, couples therapy) as a first-line intervention

Abbreviation: CSBD, compulsive sexual behavior disorder. [a] Need of expertise in sexual medicine/clinical sexology.

medical or psychological education (eg, training in psychiatry, psychotherapy, clinical psychology).

Different psychotherapeutic modalities and techniques can be used, depending on the patient, resources, possibilities, and abilities. Individual therapy, group therapy, and couples therapy are possible modalities. Medical treatment is often utilized.

These treatment choices depend on the following[15]:

- Motivation and compliance
- Severity of CSBD symptoms with a special focus on failure to control sexual impulses and urges
- Type of CSBD (autoerotic or partnered) and relationship status
- Previous medical, psychiatric, sexual, and criminal history
- Comorbid somatic disorders (eg, sexually transmitted infection) and psychiatric disorders (especially the association of CSBD with paraphilic disorders or chemsex practices)

In terms of timing, it makes sense to distinguish an initial phase targeting stabilization, motivation, and self-management[15,147,148,149] from later, medium-, and longer-term treatment phases that focus on the understanding of the aforementioned functions of sexual behavior, intimacy concerns, and relationship issues.

In a recent systematic review, Antons et al[151] identified 24 studies with interventions for CSBD, including 4 randomized controlled studies. In the reviewed studies, the most widely used cognitive behavior therapy components were as follows:

- Psychoeducation
- Stimulation of motivation and motivation for change (eg, motivational interviewing)
- Identification of goals
- Awareness of thoughts, emotions, and beliefs
- Training on self-regulation and urge management
- Skill training: development of problem-solving skills, conflict management, time management, and coping strategies
- Mindfulness and meditation exercises
- Relapse prevention and maintenance program

Acceptance and commitment therapy has also been used.[151] Many of these techniques are especially useful for the initial treatment phase. However, it is remarkable how treatment programs to date have paid little attention to the specificity of the sexual symptom itself,[144] the significance of moral incongruence, erotic conflicts, and previous traumatic experiences and have neglected to address attachment, intimacy, and authenticity.

A group of experts from the World Federation of Societies of Biological Psychiatry recently proposed an algorithm[15] for the pharmacologic treatment of CSBD (based on Briken and Turner[152] and Thibaut et al[153]). The procedure—and thus the degree of intervention—depends on the severity of the CSBD symptoms. Specifically, it focuses on evidence for the use of pharmacologic treatment, and it describes 3 levels of CSBD (mild, moderate, severe) that guide the proposals for treatment. Roughly described, psychotherapy alone is used at the level 1 treatment and as a basis of all treatment going forward. At level 2, either selective serotonin reuptake inhibitors (eg, escitalopram) or the opioid receptor antagonist naltrexone is considered. At level 3, the combination of these 2 drugs is recommended. These medications have shown some efficacy in the treatment of CSBD but are prescribed "off-label." For the simultaneous presence of CSBD with paraphilic disorders, there is a separate, longer established algorithm[153] that is predominantly oriented toward the risk for other persons and includes testosterone-lowering medications (eg, cyproterone acetate) or gonadotropin-releasing hormone agonists (eg, triptorelin). While these algorithms exist, more evidence

is needed on pharmacologic interventions in CSBD. Until now, only 1 randomized controlled trial for paroxetine, naltrexone, and placebo[154]; 1 prospective open open-label trial with naltrexone[155]; and some retrospective analyses and case studies[15] have been published.

Conclusion

With this article, we have attempted to clarify the role of sexual medicine experts in the diagnosis and treatment of CSBD. We are convinced that the expertise from sexual medicine is essential in adequately assessing and treating those with CSBD. At the same time, we express our concern about treatment approaches that reinforce sex-negative moralizing attitudes about sexuality and are not informed from sexology and sexual medicine training. Without this training and expertise supported by multicultural perspectives, we see a risk of overdiagnosing conditions that do not actually meet the criteria for CSBD, thus increasing moral incongruence and distress. In addition, we strongly recommend that patients with CSBD receive integrated, comprehensive, biopsychosocial, and sexologically informed treatment that goes beyond control over sexual behavior and reduction of sexually dysfunctional behavior but assists patients to achieve sexually healthy and satisfied lives. To accomplish this, the expertise of sexual medicine specialists is indispensable.

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Author contributions

Conception and design: P.B., J.C., M.L.-S., J.G.P. Acquisition of data: P.B., B.B., J.C., E.C., A.G., S.W.K., M.L.-S., J.G.P. Analysis and interpretation of data: P.B., B.B., J.C., E.C., A.G., S.W.K., M.L.-S., J.G.P. Drafting the manuscript: P.B., B.B., J.C., E.C., A.G., S.W.K., M.L.-S., J.G.P. Revising it for intellectual content: P.B., B.B., J.C., E.C., A.G., S.W.K., M.L.-S., J.G.P. Final approval of the completed manuscript: P.B., B.B., J.C., E.C., A.G., S.W.K., M.L.-S., J.G.P.

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Conflicts of interest

J.G.P. is a consultant for FirmTech, Kanna Health, Ovoca Bio/IVIX, Reunion Neuroscience, SmartBod/Lioness, and Vella Bioscience and serves as editor in chief of *Current Sexual Health Reports*. E.C. serves on the Sexual Health Advisory Committee for Ro, Inc. A.G. has received honoraria for lectures or participation in advisory boards or being a consultant for Viatris, Eli Lilly, Pfizer, Sandoz, Futura Medical/Exeron, Astellas, Novo Nordic, Freya, and Lundbeck. S.W.K. is a board member for the Nevada Advisory Committee on Problem Gambling and the Society for the Advancement of Sexual Health and serves as editor in chief of *Sexual Health & Compulsivity*. M.L.-S. has received honoraria as a consultant for AbbVie, Angelini, Apotex, Bayer, Berlin Chemie, Biogen, Bristol Myers Squibb, Eli Lilly, European House Ambrosetti, European Foundation of Art Therapy, Lundbeck, Novo Nordisk, OCInfo, Pfizer, Polpharma, Servier, Stada, and Verco. P.B. was a consultant to the World Health Organization regarding the development of the *ICD-11* classification of sexual disorders and sexual health.

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